Remarks

The amendments to the specification and claims do not add new matter. Specifically, the amendment to the specification at page 1 merely adds the applicants' claim of priority as is required. The amendment to the specification at page 21, merely corrects a grammatical error by adding the understood verb "are". For all these reasons, the amendments to the specification do not add new matter.

The amendments to the claims do not add new matter. Some amendments merely cancel claims 5 and 11-19. The amendment to claim 1 merely clarifies in the body of the claim that which is recited in the preamble—that the "radiation curable magnetic composition [be] **suitable for** in-line printing" such that the viscosity recited in the claim is inherently measured at the "in-line printing temperatures" for which the composition is "suitable." One skilled in the art recognizes that "in-line" printing is performed at ambient temperature, such as 22° C. *See* Exhibit A: U.S. Pat. 5,666,785 (Jouffreau, et al.), entitled "Method and Apparatus for **In-Line Printing** on a Water Soluble Film," which issued on 09/16/97, teaches at col. 4, lines 65-67 ("Preferably, the ink used by ink supply 26 is a fast-drying, water soluble ink having a **viscosity** of between **70 and 90 centipoises** at **22°C.**"). One skilled in the art further recognizes that 22° C corresponds to 72° F.

The amendment to independent claim 20 also does not add new matter. In particular, it merely clarifies claim 20 by restating the subject of a clause so as to convert a long-winded clause into two separate clauses.

For all these reasons, the amendments to the claims also do not add new matter

Bases for Objection/Rejection

Previously, claims 1 and 3-5 were rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by EP 0 418 808 A2 (Ho Kuan).

Previously, claim 2 was rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over EP 0 418 808 A2 (Ho Kuan) in combination with U.S. Pat. 6,143,193 (Akioka).

Previously, claims 6-10 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over EP 0 418 808 A2 (Ho Kuan) in combination with U.S. Pat. 5,863,847 (De Voe).

The Applicants will address each basis for objection or rejection in Sections I-III, respectively, which follow.

I. Anticipation by EP 0 418 808 A2 (Ho Kuan)

Previously, claims 1 and 3-5 were rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by EP 0 418 808 A2 (Ho Kuan). According to the Patent Office, Ho Kuan discloses the "magnetic dispersion composition" of claims 1 and 3. [Official Action at page 4.] In relation to claims 4 and 5, the Patent Office cited to Ho Kuan at page 17, lines 35-43 for disclosing that the "magnetic composition comprises a rare earth alloy." [Official Action at page 4.] The Applicants respectfully disagree.

Claim 1 of the Applicants' invention recites as a limitation "said radiation curable magnetic composition having a viscosity within the range of 50 cps to 10,000 cps." In addition to the viscosity limitation, by use of the term "**said**," "said radiation curable magnetic curable composition" of claim 1 is referring back to the antecedent "radiation curable magnetic composition **suitable for in-line printing**" as recited in the preamble. [Emphasis added in bold.] To allegedly satisfy the viscosity limitation, the Patent Office cites to Ho Kuan at page 9, line 50 for the disclosure of a "A-C 617, a low molecular weight polyethylene homopolymer, melting point = 102°C, viscosity = 148 cps at 140°C, . . ." [Official Action at page 4.] However, this disclosure from Ho Kuan would not satisfy

the claimed viscosity limitation for several reasons.

First, the viscosity limitation of Applicants' claim 1 is directed to the viscosity of "said radiation curable magnetic composition." In contrast, the viscosity number recited in Ho Kuan is directed to the viscosity of an "additive" [Ho Kuan at page 9, lines 43 and 44] and not to the viscosity of the radiation curable magnetic composition itself. Secondly, the "additive" of Ho Kuan has a melting point of "102°C" which means that it is a solid having an infinitely high viscosity at room temperature--the temperature at which in-line printing is performed. Further, the viscosity ("148 cps") relied upon by the Patent Office for the polyethylene homopolymer "additive" of Ho Kuan was measured at "140°C" [Ho Kuan at p. 9, line 50], which is an extremely high temperature. In contrast, the "radiation curable composition" of claim 1 of the Applicants' invention refers back to "[a] radiation curable magnetic composition **suitable for in-line printing**." One skilled in the art, recognizes that "in-line printing" is performed at ambient type temperature (20°-30°C)[1], which one skilled in the art recognizes as 68° - 86°F, and which is 70°-80°C below the 102°C melting point of the polyethylene "additive" of Ho Kuan, and 110°-120°C below the "140°C" temperature at which the viscosity in Ho Kuan was reported.

Instead of being "suitable for in-line printing" (which is performed at ambient temperature), Ho Kuan discloses that its radiation curable magnetic compositions are formulated for **extrusion** at "temperatures in the range between about 110°C and 180°C, depending upon the compound being extruded." [Ho Kuan at page 10, lines 31-33.] Such high temperature extrudable formulations of Ho Kuan's radiation curable magnetic composition are well above the room temperature printable formulations that are suitable for Applicants' "in-line printing." Moreover, the high temperature formulations in Ho Kuan utilize high melting point polyethylene additives such as A-C 617 because the formulation "**must**" provide "green strength" when cooled to room temperature after

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[1] See Exhibit A: U.S. Pat. 5,666,785 (Jouffreau, et al.), entitled "Method and Apparatus for **In-Line Printing** on a Water Soluble Film," which issued on 09/16/97, teaches at col. 4, lines 65-67 ("Preferably, the ink used by ink supply 26 is a fast-drying, water soluble ink having a **viscosity** of between **70 and 90 centipoises** at **22°C**.").

extrusion but prior to curing. [See Ho Kuan at page 3, lines 22-25 ("The binder **needs** to have a low viscosity at **processing temperatures** [*i.e.*, between about 110°C and 180°C] and enough **hot strength** to allow a product and particularly an **extruded strip to be made** from a mixture of rare earth magnetic powder and the binder. The binder **must** provide a **sufficiently high uncured 'green strength' at room temperature** so that the [extruded] product can be formed and handled prior to curing."); emphasis added in bold.] By Ho Kuan's above use of the words "**needs**" a low viscosity at processing temperatures, and "**must**" provide a **sufficiently high uncured 'green strength' at room temperature** to respectively describe the binder and magnetic composition, Ho Kuan is describing a composition that would **only** be suitable for high temperature extrusion and that because of hardening and green strength would **not** be suitable for in-line printing which is performed at room temperature printing.

For all these reasons, the compositions of Ho Kuan, which are formulated for **extrusion** at about "110°C and 180°C," would not anticipate the composition of claim 1 which must be "suitable for in-line printing" which is performed at room temperature, and which has a "viscosity within the range of 50 cps to 10,000 cps at in-line printing temperatures." Because claims 3-5 depend from claim 1, they incorporate all of the limitations of claim 1. Accordingly, claims 1 and 3-5 would not be anticipated by Ho Kuan.

IV. Obviousness over EP 0 418 808 A2 (Ho Kuan) with U.S. Pat. 6,143,193 (Akioka)

Previously, claim 2 was rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over EP 0 418 808 A2 (Ho Kuan) in combination with U.S. Pat. 6,143,193 (Akioka). Claim 2 is directed to the composition of claim 1 comprising from 80 to 90 **weight %** magnetic particles. The Patent Office admits that "in Ho Kuan the maximum value of the magnetic content is 50%." [Official Action at page 4.] To make up for this deficiency, the Patent Office cited to Akioka stating "Akioka teaches a rare earth magnetic composition with a magnetic content of between 78-83 **% by volume**." [Official

Action at page 4; emphasis added in bold.] One skilled in the art recognizes that the Applicants' claims are structured in "**weight %**" (which is **% by weight**), whereas the Akokia's disclosure is in "**% by volume.**" One skilled in the art also recognizes that the rare earth metals and transition metals in the composition of Akioka have at least 7 times the density of any thermoplastic resin (*e.g.*, nylon) that makes up the balance of the formulation. For example, the density of iron (which is less dense than the rare earths) is 7.658 times the density of water (which is more dense than the thermoplastic resins). Thus, when the lowest "**% by volume**" content (78-83 % by volume) of the **high density** magnetic particles of Akioka is converted into **weight %** relative to the 22-17% % by volume of **low density** organic binding resin, the resulting weight % of the magnetic particles in Akioka's magnetic composition would be substantially greater than the "90 weight %" that is the upper limit of Applicants' claim 2. Specifically, if the lowest % by volume content (78%) of rare metals in Akioka had only **seven** times the density of the thermoplastic resin, it would constitute 96.1 weight% of the resulting composition. This weight% exceeds the maximum 95 weight % of the Applicants' claims.[2] [See also Akioka at col. 1, lines 56-57 comparing the closest art ("The content of the thermosetting resins [in the magnetic composition] is low from **0.5 to 4.0 percent by weight** due to its high fluidity."); and at col. 2, lines 8-14 ("It is a second object of the present invention to provide a rare earth bonded magnet, a rare earth magnetic composition for manufacturing the same, and a method for manufacturing the rare earth bonded magnet utilizing the above-mentioned advantages of injection molding, in which **the rare earth bonded magnet contains a minimum amount of thermoplastic resin as a binder resin.** . . ."); emphasis added in bold.] This is consistent with the fact that Akioka is making stand alone structural magnets [see Figs. 1A-1C of Akioka] and not printed magnetic coatings as for the composite articles of Applicants' invention. For all these reasons, Akioka would not render obvious the weight limitation in claim 2 of the Applicants' invention.

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[2] .78 x 7= 5.46; .22 x 1= .22; 5.46/(5.46 + .22) = .96.1 (or 96.1 weight %)

Even more fundamentally, Akioka fails to make up for the fact that the Ho Kuan fails to teach or suggest Applicants' "said radiation curable magnetic composition having a viscosity within the range of 50 cps to 10,000 cps" and being "suitable for in-line printing" which is known in the art to be performed at room temperature. Unlike the Applicants' invention, and like Ho Kuan, Akioka discloses the use of high melting point "thermoplastic" resins that are inherently solid at room temperature. Specifically, Akioka discloses that preferably the "thermoplastic resin used as a binder resin has a melting point of 400°C or less." [Akioka at col. 2, lines 39-40.] Consistent with the disclosure of the use of high melting point resins that are a solid at room temperature, Akioka discloses 26 examples of the use of magnetic resin compositions that are made for extrusion (Tables 2-3) or injection molding (Tables 8-9) at cylinder temperatures of 240°C to 320°C[3]. Thus, like Ho Kuan, Akioka only discloses the use of high melting point resins that are only useful for high temperature processes, such as extrusion and injection molding. Moreover, as recited in composition claim 13 of Akioka, "said composition has excellent fluidity during extrusion molding." In contrast, Applicants' claim 2 incorporates by reference to claim 1 that the composition is "suitable for in-line printing." Accordingly, the combination of Ho Kuan and Akioka would not have rendered Applicants' claim 2 obvious.

V. Obviousness over EP 0 418 808 A2 (Ho Kuan) with U.S. Pat. 5,863,847 (De Voe)

Claims 6-10 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over EP 0 418 808 A2 (Ho Kuan) in combination with U.S. Pat. 5,863,847 (De Voe). The Patent Office admits that "Ho Kuan does not teach a free radical cure system, a cationic cure system nor a combination radical cationic cure system that is to be

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[3] The Applicants wish to point out a typographical error in Akioka at col. 10, line 44, wherein Akioka incorrectly lists the temperature of material in the cylinder at "20 to 330°C". The "20" should be "200" or "220" to be consistent with the recitation of cylinder temperatures of "220 to 350°C" at col. 11, line 10, or the recitation of cylinder temperatures of 240°C to 320°C in the 26 examples.

used to cure the resin in the magnetic composition." [Official Action at page 5.] To make up for this deficiency, the Patent Office cited to De Voe. According to the Patent Office, De Voe discloses "a free radical cure system that employs both an epoxy and acrylate resins" and that "[u]sing a free radical curing system results in a coating with improved consistency (homogeneity)." [Official Action at page 5.] However, as discussed in Section III *supra*, Ho Kuan only discloses the use of high melting point formulations of binder, that "must provide a sufficiently high uncured 'green strength' at room temperature" [Ho Kuan at page 3, lines 24-25], whereas the adhesives of the Applicants' invention must be fluid at room temperature to be "suitable for in line printing" which is performed at room temperature. De Voe is like Ho Kuan, in that De Voe also discloses the use of a high melting point adhesive, *i.e.*, a "hot melt" adhesive [De Voe at col. 17, line 37 ("hot melt make coat")] which is preferably applied at high temperature, *i.e.*, "of about 50° to 125° C, more preferably from about 80° to 125° C." [De Voe at col. 17, lines 33-36.] Further, the post cure conditions of De Voe are also performed at high temperatures, such as "less than a few seconds at a temperature of about 150° C to longer times at lower temperatures" with "typical post cure conditions" being "about one minute or less at a temperature of about 100° C." [De Voe at col. 19, lines 12-15.]

Thus, De Voe fails to make up for Ho Kuan's teaching of the use of high melting point adhesives that otherwise "must provide a sufficiently high uncured 'green strength' at room temperature" such that they would not be "suitable for in-line printing." [Ho Kuan at page 3, lines 24-25.] For these reasons, the combination of Ho Kuan and De Voe would not have rendered claims 6-10 unpatentable under 35 U.S.C. § 103(a).

CONCLUSION

In view of the arguments herein, any rejection of claims 1 and 3-5 under 35 U.S.C. § 102(b) for allegedly being anticipated by EP 0 418 808 A2 (Ho Kuan) have been rebutted. In view of the arguments herein, the prospective rejection of claim 2 under 35 U.S.C. § 103(a) for allegedly being unpatentable over EP 0 418 808 A2 (Ho Kuan) in

combination with U.S. Pat. 6,143,193 (Akioka) has been rebutted. In view of the arguments herein, the prospective rejection of claims 6-10 under 35 U.S.C. § 103(a) for allegedly being unpatentable over EP 0 418 808 A2 (Ho Kuan) in combination with U.S. Pat. 5,863,847 (De Voe) have been rebutted.

Thus, the allowance of claims 1-4, 6-10 and 20-29 is respectfully requested.

Respectfully submitted,

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